REMARKS

Applicants respectfully request reconsideration of the present application in view of the following reasons. Claims 1 and 15 have been amended. The amendments to Claims 1 and 15 do not add new matter and does not require a new search. Claims 17-21 have been added. Support for new Claims 17-21 can be found throughout the Specification and in the original claims. Claims 1-10 and 15 are pending in this application.

Applicants kindly note that the only standing rejection of Claim 7 is a Section 112 rejection. Applicants respectfully request that the status of Claim 7 be clarified in the next action.

1. Claim Rejections Under 35 U.S.C. § 112

On page 2 of the Office Action, Claims 1-10 and 15 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

On page 2, the Office Action states:

> Regarding claims 1 and 15, new subject matter, "wherein the data packet includes a unicast destination address corresponding to a mobile node; wherein the link-layer frame includes a broadcast address and the unicast destination address", was not disclosed in the specification, as originally filed. Claims 2-10 are dependent claims.
>
> Regarding claim 7, new subject matter, "the unicast destination address is a network layer address", was not disclosed in the specification, as originally filed.

Applicants respectfully submit that support for the above references features can be found in at least FIG. 1 and in paragraphs **[0037]** and **[0038]** as follows:

> FIG. 1 shows a schematic diagram indicating the general mechanism of the present invention. According to this general multicast mechanism, when an access router (AR) 20

> determines from a received data packet that it has to send a multicast data packet to a destination node, then the AR 20 **broadcasts** this multicast data packet to the link layer **using a predefined link layer address (B_LLA) for broadcasting purposes.** This data packet can be an incoming multicast data packet in case of a normal multicast procedure, or a multicast data packet generated in the AR 20, e.g. a neighbour solicitation message in the address resolution protocol. In the latter case, the incoming data packet at the AR 20 is not a multicast data packet but a **unicast** one, and the generated multicast data packet is sent to the link layer. In case of the address resolution procedure, the IP packet included in the link layer frame is not the data packet received at the AR 20 but is another one generated in the AR 20 as a result of the address resolution procedure. Thus, the general mechanism can be applied when the AR 20 needs to send a multicast data packet to the link layer e.g. due to an incoming multicast data packet but also when a unicast data packet arrives at the AR 20 and the AR 20 does not know the link layer address associated with the **network layer address** of the received **unicast** data packet.
>
> [0038] In the following, the case of a received unicast IP data packet is described with reference to FIG. 1. When the AR 20 cannot determine a link-layer address based on the given network-layer address, e.g. IP address, received in a header portion 61' of the received IP data packet with a payload portion 62', it recognizes that a packet has to be sent using the above multicast mechanism according to the present invention. To achieve this, the AR 20 generates a link-layer frame 70' with a broadcast link-layer address in its header portion 71' and the neighbor solicitation message in its payload portion 72'.

(Underlining and emphasis added). Further, in paragraph **[0041]**:

> Every CAP (Cellular Access Point) of the cellular network accepts the broadcast link-layer frame 70' with the predetermined broadcast address "B_LLA" and the encapsulated IP data packet 60' and checks the IP destination address of the desired mobile node. Then, only the CAP supporting the addressed mobile node forwards the broadcast link-layer frame 70' with the encapsulated IP data packet 60' to the addressed mobile node.

(Underlining added). Therefore, the features "wherein the data packet includes a unicast destination address corresponding to a mobile node," "wherein the link-layer frame includes a

broadcast address and the unicast destination address, and "wherein said unicast destination address is a network layer address" are supported by the Specification. For at least the above reasons, Applicants respectfully request withdrawal of the rejection.

II. Claim Rejections Under 35 U.S.C. § 102

On page 3 of the Office Action, Claims 1-6, 8, 9, and 15 were rejected under 35 U.S.C. 102(a) as being anticipated by alleged Applicant Admitted Prior Art (hereinafter "AAPA"). Applicants respectfully disagree; however, Applicants have amended Claims 1 and 15 to clarify the claimed subject matter and further prosecution.

Amended independent Claim 1 recites in part:

> generating a link-layer frame, wherein the link-layer frame includes a broadcast address and the unicast destination address; and
>
> sending, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame.

(underlining added.) Amended independent Claim 15 recites in part:

> an addressing unit configured to generate a link-layer frame if the link-layer address corresponding to the mobile node is not available, wherein the link-layer frame includes the unicast destination address and a broadcast address; and
>
> a forwarding unit configured to forward, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame.

(underlining added.) The alleged AAPA fails to disclose at least these features, specifically, a broadcast address.

Applicants have amended Claims 1 and 15 to further clarify the term "broadcast address." Claims 1 and 15 now recite "wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame." Support for the amendment is in at least **Para. [0009]** and **[0041]**.

The Examiner points to the text associated with FIG. 4 as the alleged AAPA. In particular, the Examiner states that "generating a link-layer frame includes a broadcast address (fig.4/no. 61)." Element 61 of FIG. 4 is discussed as follows:

> When the IP data packet 60 which comprises a header portion 61 and a payload portion 62 arrives at the AR 20, the AR 20 derives the respective routing interface from the routing table 80 and uses the neighbour cache of the derived interface to obtain the corresponding link-layer address ("MN_LLA") of the mobile node.

(**Para. [0007]**; Underlining added). Thus, header portion 61 is merely an IP address of a packet incoming to an access router.

In contrast, Claim 1 recites: "receiving the data packet, wherein the data packet includes a unicast destination address corresponding to a mobile node; [and] generating a link-layer frame, wherein the link-layer frame includes a broadcast address **and** the unicast destination address." Similar features are recited in Claim 15. Hence, the header portion 61 cannot be a "broadcast address" as in Claims 1 and 15. Further, paragraph **[0009]** states:

> When an IP data packet addressed to the IP address of a mobile node arrives at the AR 20 and the AR 20 does not know the respective link-layer address, this event provokes the address resolution procedure at the network layer which procedure needs to multicast **a neighbour solicitation message** addressed to a network-layer address for multicast purpose, i.e. **a solicited-node multicast address' corresponding to the target IP address**. **Thus, the IP data packet to be sent is not the incoming IP data packet but the neighbour solicitation message used for learning the link-layer address of the mobile node**. At link level, the link-layer frame is addressed to a well know link-layer address for multicast purposes, since the AR 20 is not aware of the link-layer address of the mobile node.

> This message will reach every mobile node **but only those joining this network-layer address for multicast purpose will process the neighbour solicitation message**. However due to the connection-oriented nature of the cellular-based system, there is **no possibility to broadcast** this kind of messages, i.e. messages with multicast purpose in general, to every mobile node. Thus, the IP data packets have to be forwarded to every mobile node one by one over the radio link. This leads to an increased load and wasted bandwidth of the radio link.

(Emphasis added.) Thus, the alleged AAPA simply discloses a standard neighbour solicitation message. Only access points that have joined a particular network-layer address for multicast purpose will process the neighbour solicitation message. (**Para. [0009]**). Consequently, due to the connection-oriented nature of a cellular-based system, **a broadcast message is not possible**. (**Para. [0009]**).

Hence, the alleged AAPA does not disclose "sending, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame," as recited by Claim 1, or "a forwarding unit configured to forward, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame," as recited by Claim 15. For at least these reasons, Applicants submit that Claims 1 and 15 are patentable over the alleged AAPA.

An anticipation rejection cannot be properly maintained where the reference used in the rejection does not disclose all of the recited claim elements. Claims 1-6, 8, and 9 include the elements of Claim 1. Applicants submit that Claim 7, which includes elements of Claim 1, is also patentable over the alleged AAPA for at least the above reasons. Therefore, Applicant respectfully requests withdrawal of the rejection of Claims 1-9 and 15. For at least

the same reasons, Applicants submit that new Claims 17-21 are patentable over the alleged AAPA.

III. Claim Rejections Under 35 U.S.C. § 103

On page 4 of the Office Action, Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over alleged AAPA in view of U.S. Patent No. 7,339,928 to Choyi (hereafter "Choyi"). Applicants respectfully disagree; however, Applicants have amended Claim 1, as discussed above, to clarify the claimed subject matter and further prosecution.

Choyi merely teaches various multicast approaches as they relate to foreign mobility and handoffs between cells. (Col. 2, lines 46-57). In particular, Choyi discusses HAWAII, Cellular IP, the Singapore University Proposal, Hierarchical Micro Mobility, Multicasting Based Architecture for Internet Host Mobility, and the Multicast Micro-Mobility (MMM) Protocol. (*Id.*). However, as argued in the previous response dated May 28, 2009, Choyi does not disclose "sending, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame," as recited by Claim 1.

As argued above in **Section II**, the alleged AAPA does not disclose "sending, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame," as recited by Claim 1.

Therefore neither the alleged AAPA nor Choyi, alone or in combination, disclose "sending, via the broadcast address, the link-layer frame to a plurality of access devices, wherein at least one access device of the plurality of access devices supports the mobile node, and wherein the broadcast address is configured such that each of the plurality of access devices does not have to join the broadcast address in order to process the link-layer frame,"

as recited by Claim 1. For at least these reasons, Applicants submit that Claim 1 is patentable over the alleged AAPA and Choyi.

An obviousness rejection cannot be properly maintained where the references used in the rejection do not disclose all of the recited claim elements. Claim 10 includes the elements of Claim 1. Therefore, Applicant respectfully requests withdrawal of the rejection of Claim 10. For at least the same reasons, Applicants submit that new Claims 17-21 are patentable over the alleged AAPA and Choyi, alone or in combination.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C. F. R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C. F. R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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